REMARKS

After entry of this amendment, claims 1-5, 7, 9, and 11 are pending. Claims 8, 10, and 12-19 have been cancelled without prejudice or disclaimer. The subject matter of the cancelled claims 8 and 10 has been incorporated into claim 1. The claims have been amended without prejudice or disclaimer and find support *inter alia* in the original claims. Claim 1 finds further support in the specification at page 3, lines 16-20 and page 4, lines 26-27. Claims 9 and 11 have been amended for proper antecedent basis. No new matter has been added.

Rejection Under 35 U.S.C. § 102

Claims 1, 3-5, 8, 9, 13, 14, and 19 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Bedbrook *et al.* (U.S. Pat. No. 5,141,870, hereinafter "Bedbrook"). Applicants respectfully disagree. However, in order to expedite the prosecution, the claims have been amended without prejudice or disclaimer to recite that the vector includes a heterologous DNA sequence (part d)). Applicants respectfully request reconsideration in light of the amendment and for the following reasons.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegall Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987). "[T]o hold that a prior art reference anticipates a claim, the Board must expressly find that every limitation in the claim was identically shown in the single reference." *Gechter v. Davidson*, 116 F.3d 1454, 1460 (Fed. Cir. 1997). Because Bedbrook does not expressly or inherently describe the addition of a heterologous DNA sequence in the expression vector for potato transformation that would cause changes in the carbohydrate concentration or the carbohydrate composition of regenerated potato plants when expressed, it is respectfully submitted that Bedbrook does not anticipate the method as now claimed. Furthermore, Applicants note that the cancelled claim 10 which recited the elements now included in claim 1 was not included in this rejection.

Additionally, Applicants respectfully submit that Bedbrook, alone or in combination with other references cited in the Office Action, does not render the method as now claimed obvious in view of the same argument presented in the following section, and further in view of the teaching-away result presented in Bedbrook. As disclosed in Example III and Table 8 (Col. 45-47), Bedbrook illustrates that the selection efficiency is much higher when kanamycin is used as

selection agent. In Example III, half of the transformation mixture was subjected to selection on kanamycin, while the other half was subjected to herbicide selection. As shown in Table 8, the herbicide selection, at the most, achieved only about 50% of the kanamycin selection efficiency. See Col. 47, Table 8. In view of such teaching, one skilled in the art would not have been motivated to use an herbicide selection in lieu of the antibiotic selection with a reasonable expectation of success that such modification would result in a selection rate higher than the antibiotic selection.

In light of the amendments, reconsideration and withdrawal of this rejection is respectfully requested.

Rejections Under 35 U.S.C. § 102/103 and § 103

Claims 1-5, 7-9, and 13-19 stand rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Sathasivan *et al.* (U.S. Pat. No. 5,767,366, hereinafter "Sathasivan"). Additionally, claims 1-5 and 7-19 stand rejected under U.S.C. § 103(a) as obvious over Sathasivan in view of Edwards *et al.* (WO 99/06575, hereinafter "Edwards"). Applicants respectfully traverse and urge reconsideration of the rejection for the following reasons.

As disclosed in the specification at page 4, lines 26-44, the present application describes a new selection system that provides a high efficiency in recovering transgenic potato plants with a low escape rate. The method as provided by the present application uses a mutated AHAS gene conferring imidazoline type herbicide resistance as a selection marker, **without the aid of an antibiotic selection**, to achieve transformation efficiency higher than any efficiency rate known in the art at the time of filing. See page 3, line 42 through page 4, line 2.

Sathasivan discloses AHAS resistance genes and their use for generating herbicide resistance plants. As the Examiner acknowledged in the Office Action at page 6, Sathasivan does not teach a heterologous DNA sequence encoding a DNA that contains information that causes changes in the carbohydrate concentration and the carbohydrate composition of regenerated potato plants. Thus, for the same reasons as discussed above and in light of the amendment, Applicants submit that Sathasivan does not anticipate the method as now claimed. Furthermore, it is respectfully submitted that Sathasivan, alone or in combination with Edwards, does not render the claimed invention obvious for the following reasons.

To support a *prima facie* conclusion of obviousness, the prior art must disclose or suggest all the limitations of the claimed invention. See *In re Lowry*, 32 F.3d 1579, 1582 (Fed. Cir. 1994).

Specifically, the Examiner asserts that Sathasivan discloses a vector comprising a DNA sequence encoding a mutated AHAS protein that is tolerant to imidazolinone herbicides, and the disclosed mutated gene can be used as a selection marker in plant transformation systems. However, Sathasivan does not teach or suggest that a heterologous DNA sequence containing information that causes changes in the carbohydrate concentration or the carbohydrate composition of regenerated potato plants can be used with the mutated AHAS protein encoding DNA sequence for transformation, as acknowledged by the Examiner. Accordingly, it is respectfully submitted that the present amendment overcomes any *prima facie* obvious over Sathasivan which may have existed as to the former claims.

Furthermore, as disclosed in Sathasivin, the selection of transgenic plants was done by using the kanamycin resistance gene. See Sathasivan, Col. 13, lines 10-12. Although the AHAS resistance gene was present, the herbicide imazapyr was not used as selection agent. Col. 13, lines 12-13. Instead, Sathasivan teaches the use of an antibiotic, not an imidazolinone herbicide, for selection of transformants. Furthermore, the disclosure regarding the difficulty of cloning a fragment of 5.8 kb in an 11.5 kb vector without additional kanamycin selection marker (see Col. 12, lines 58-60) further suggests that antibiotic selection provides a more efficient method in selecting transformants. In view of this teaching, one skilled in the art would not have been motivated to substitute the antibiotic selection with other means such as the imidazolinone herbicide as selection agent. Similarly, the skilled artisan would not have had a reasonable expectation of success that the use of imidazolinone herbicide as selection agent **alone**, without the aid of antibiotic selection, would provide a high efficiency in selecting transformants as discovered by the inventors of the present application. Because there is no suggestion or motivation in Sathasivin of the method as now claimed, it is respectfully submitted that Sathasivin does not render the method as now claimed *prima facie* obvious.

Edwards does not remedy the deficiencies of Sathasivin. Edwards is relied on by the Examiner for the teaching of transforming a potato plant with a sense or antisense construct of an isoamylase coding region wherein expression of the antisense construct increases the production

of amylopectin type starches, or, for teaching overexpression of the sense construct to increase the production of amylose type starches. However, as discussed in the response to the Office Action dated July 12, 2007, all of the plasmids used in Edwards contain antibiotic resistant genes as selection markers. None of them contain an AHAS selection marker. Accordingly, Edwards does not teach or suggest the use of imidazolinone herbicide as selection agent, much less that improved selection efficiency can be attained with herbicide selection. Thus, the combination of Sathasivan and Edwards does not teach or suggest a highly efficient selection method as recited in the present claims using solely an imidazolinone type herbicide as a selection agent without the aid of any antibiotic selection agent. It is respectfully submitted that Sathasivan and Edwards, alone or in combination, do not render the method as now claimed *prima facie* obvious.

Moreover, a *prima facie* case of obviousness is rebuttable by evidence that the claimed invention possesses unexpectedly advantageous or superior properties. As discussed in the specification at pages 4-5, the highest transformation efficiency achieved by using nptII as selection marker in potato transformation known in the art is 73%, which was further confirmed by the present application in Example 10, at page 20. Despite the teaching away of the art (for example, Bedbrook and Sathasivan as discussed above), the inventors of the present application discovered that the selection efficiency could be dramatically improved to as high as 100% by using a mutated AHAS gene as selection marker in potato transformation without the presence of an antibiotic selection gene. This is further demonstrated in Example 9 (pages 19-20), Example 11 (pages 20-21), and Example 12 (pages 21-22) of the specification. Thus, Applicants has disclosed that the use of a mutated AHAS gene as selection marker in potato transformation in the absence of an antibiotic selection gene generates results which could not have been predicted.

For the above reasons, Applicants respectfully request reconsideration and withdrawal of the rejection.

CONCLUSION

For at least the above reasons, Applicants respectfully request withdrawal of the rejections and allowance of the claims.

Accompanying this response is a petition for a three-month extension of time to and including March 28, 2007 to respond to the Office Action mailed September 28, 2007, and a

Request for Continued Examination with the required fee authorization. No further fee is believed due. However, if an additional fee is due, the Director is authorized to charge our Deposit Account No. 03-2775, under Order No. 12810-00141-US from which the undersigned is authorized to draw.

Respectfully submitted,

By _____

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